The Federal Challenge to University-Based Education Research in the United States:
Turning Research into Policy and Practice

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This chapter explores the current environment for education research in the United States and the ways in which recent changes in the national policy framework, resources, infrastructure, and roles have introduced both new options and key challenges for university-based education researchers in developing, disseminating, and transferring research knowledge. The chapter begins by describing the federal government’s recent role in defining the education research environment and framing the research agenda. This federal influence has been exercised through building and funding research capacity, infrastructure, and resources and federalizing policy and national education priorities established under the No Child Left Behind (NCLB; 2002) legislation. The main premise of this chapter is that current national policies and priorities for education research set a new course by prescribing what is to be researched and how that research is to be designed, conducted, and disseminated to education policymakers and practitioners.

The main body of the chapter explores new trends likely to shape university-based education research going forward. These include changes in federal funding priorities; research quality, design, and rigor; information technologies and data systems; publication, audience, and knowledge transfer; and research relevance and utilization. The roles of public and private entities such as state governments and foundations also are considered. These factors have implications not only for university researchers, research scholarship, and the education research process itself, but also for schools of education and national and local policy and practice.

The chapter concludes by discussing the implications of these trends for how university-based education research is conducted and consumed. The current context presents university scholars and researchers with new opportunities, and resources, while also imposing limitations, tradeoffs, and competition. The trends in federal policy, funding, and infrastructure development that began with the passage of NCLB continue to influence the process of education research and the roles of universities in that process. The extent to which the new federalism will shape the future direction of university-based education research and its transformation into education policy and practice depends on whether universities respond to these trends as opportunities or impediments.

National Influence: Framing the Education Research Agenda and Resources

The national institutions and policies that oversee and support public education in the United States, including those that serve education research initiatives, have a long and complex organizational history. The current federal infrastructure, the modern U.S. Department of Education (ED), and the policy arena are an outgrowth of the politics, legislation, and debates about the federal role in public education that began well before the 1960s. The evolution of these institutions and the ongoing policy debates have major implications for the development of the education research branch of the federal education infrastructure and also for federal

influence on the trajectory of education research nationwide. An understanding of this evolution—as well as the development of new ideas and resources since the beginning of the Obama administration in 2008—is key to grasping the federal context for education research today and its implications for education researchers at postsecondary institutions. This section describes the most recent relevant changes in policies, priorities, institutional components, and resources at the federal level, and the future direction of education research and the roles of the university education research community.

*Federal Legislation and Policy: Setting Priorities for Education Research*

In 2001, the Elementary and Secondary Education Act (ESEA), reauthorized as the No Child Left Behind Act (NCLB; U.S. Department of Education, 2010a), was a watershed for public education in the U.S. and for education research. Perhaps more than any other piece of recent legislation, NCLB asserts a federal presence in education and wrests control of public education from state and local entities by setting and regulating policies and priorities from the top down.\(^2\) NCLB aims to increase accountability, performance, and achievement for schools, teachers, and students through standards-based reform, assessment, school choice, charter schools, and teacher quality, among other strategies and mechanisms. NCLB requires states to adopt test-based accountability systems to improve student performance and increase equity for traditionally underserved students. The law also emphasizes new standards for measuring performance and producing evidence and puts pressure on states, school districts, and schools to make local policy decisions based on scientifically based research.

NCLB policies have had an impact on education research in three main areas over the last decade. First, the legislation sets forth and focuses the education reform agenda for the country, states, and school districts. By making state aid and grant funding conditional on compliance with NCLB Title I and Title II requirements, NCLB ties priorities to the funding and determines the primacy of each policy area to be developed and researched at each level of public education and by education researchers. In general, areas of emphasis in NCLB focus on measuring student education outcomes and achievement and teacher quality and performance. Second, NCLB seeks to increase the visibility, rigor, relevance, and use of education research by promoting “scientifically based research,” a term used throughout the legislation. Although education researchers largely agree on the concept, they have yet to reach consensus on its definition. They do, however, agree that emerging definitions “directly shape the future of education research” (Eisenhart & Towne, 2003, p. 32). Third, NCLB promotes the use of experimental and quasi-experimental research design—such as randomized controlled trials (RCTs), meta-analysis, and systematic statistical analysis—to demonstrate causal effects and successfully replicate and scale results (Slavin, 2002, pp. 15–21; Eisenhart & Towne, 2003, pp. 31–38).

In response to the 2008 recession, the U.S. federal government passed the American Recovery and Reinvestment Act of 2009 (ARRA), investing $97.4 billion in education-related appropriations by fall 2010 (U.S. Department of Education, 2010b). The goals of this large but short-term investment were to “improve schools, raise achievement, drive reform and produce

\(^2\) More information on how the NCLB has influenced U.S. federal education policy can be found in Henig (2008, pp. 41–62) and Manna and Petrilli (2008, pp. 63–88).
better results” (U.S. Department of Education, 2010c) and thereby stimulate the economy. ARRA funds were dispersed mainly in the form of grants to states, school districts, and other education entities and intermediaries. Of those initiatives planned and awarded, three—Race to the Top (RttP), Investing in Innovation (i3), and the Teacher Incentive Fund (TIF)—are illustrated here as examples of how ARRA influenced education research. While the ARRA programs were intended to jump-start state and local education reform initiatives and infrastructure, many of the funds were authorized for evaluation, research, and data system development. A requirement of each of these ARRA programs was to evaluate educational programs and innovations, use data from state and district longitudinal data systems, monitor performance, and statistically analyze teacher and student outcomes.

Federal Resources for Education Research: Institutions and Funding

The primary federal agency with responsibility for education research is the Institute of Education Sciences (IES), housed within ED. Established under the Education Sciences Reform Act of 2002, IES has a mission to expand fundamental knowledge and understanding of education and document the nation’s education condition and progress by advancing quality research and its dissemination to educators, practitioners, researchers, and the public. IES pursues its mission through four major centers: the National Center for Education Research (NCER), the National Center for Education Statistics (NCES), the National Center for Education Evaluation and Regional Assistance (NCEE), and the National Center for Special Education Research (NCSER). Also managed by ED is the National Assessment of Educational Progress (NAEP). Commonly known as the Nation’s Report Card, NAEP was created by Congress to assess students’ knowledge in a variety of subjects and report on the condition and progress of U.S. education since 1969. NAEP remains a valuable data source for the study of large-scale and

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3 The RttP was designed to support and accelerate state education reform efforts by funding competitive proposals to adopt internationally benchmarked standards, prepare students for college and careers, build data system capacity for measuring student achievement and educator performance, and increase teacher quality and distribution. The i3 program, run through ED’s Office of Innovation and Improvement, awarded grants to local educational entities or partnerships to expand on proven achievement and attainment to demonstrate impacts on student achievement, student growth, achievement gaps, dropout rates, high school graduation rates, and college enrollment and completion rates. The i3 awards had significant and graduated research and evaluation requirements, designed to develop promising evidence, test causal linkages and validate impact, and demonstrate outcomes at scale. TIF was designed to develop and implement performance-based educator compensation, targeting high-needs districts and schools. For more about RttP see, http://www2.ed.gov/programs/racetothetop/index.html. For more about i3, see http://www2.ed.gov/programs/innovation/index.html. For more about TIF see, http://www2.ed.gov/programs/teacherincentive/index.html

4 For more information about ESEA, see http://www2.ed.gov/policy/elsec/leg/esea02/index.html. For more about IES, see http://www.ies.ed.gov/

5 NCER supports research and development on the quality of education and student outcomes by awarding grants and contracts to researchers across the country. NCES is charged by Congressional mandate with the primary collection, analysis, and reporting of U.S. education data. NCEE was established to promote evidence-based education, evaluate program effectiveness, and disseminate research. It is within NCEE that the Regional Educational Laboratory Program, the What Works Clearinghouse (WWC), the Education Resources Information Center (ERIC), and the National Library of Education, are housed. NCSER sponsors research to understand the needs, improve services, and evaluate effectiveness of education for children under the Individuals with Disabilities Education Act (IDEA).
longitudinal issues in student achievement. The 15-member National Board for Education Sciences (NBES), appointed by the President and confirmed by the Senate, approves IES research priorities and gives the IES director advice on the institute’s activities, collaboration with federal agencies and states, and strategies for strengthening education research, funding, scientific standards, and scientific review.

The federal government invests a significant amount of funding in annual appropriations for ED, but only a fraction of those funds are available for education research. Budget appropriations for ED have declined from approximately $72 billion in 2005 to $68.5 billion in 2008 (U.S. Department of Education, 2008). However, as a share of total outlays at ED, research and development (R&D) funds have increased from $16.91 billion in 1997 to $28.81 billion in 2005 (NSF, 2006, Table 7). In 2005, 67% of the R&D monies went to applied research, 30% went to development, and only 4% went to basic research (NSF, 2006, Table 7). In 2009, IES received $4.69 billion in discretionary funds for research, development, and dissemination; statistics; NAEP; and Statewide Data Systems, and the FY 2011 Budget Request calls for increases of 3.6%–30.2% in each category (U.S. Department of Education, 2010d). In 2009–2010, ARRA infused an additional $98 billion into the education economy on top of the annual fiscal outlays (U.S. Department of Education, 2009a). The IES portion of the ARRA discretionary funding totaled just over $10 billion and was dispersed to further develop statewide data systems and other programs and activities as mentioned above. These recent funding trends at the national level indicate that while funding for education in general remains tight, funding for education research is on the rise and is targeted toward applied research, development of national and state data systems, and research and evaluation that prioritizes rigorous analysis of student outcomes.

The National Science Foundation (NSF) also contributes to the federal infrastructure that supports education R&D, particularly in the area of science, math, engineering, and technology (STEM) education. Most of the NSF funding that goes to universities and colleges is for basic and applied research in the sciences and engineering. Within NSF, the Directorate for Education and Human Resources (EHR) promotes excellence in STEM education for all levels of the educational system. EHR invests in rigorous research on learning, integrates research and education, and facilitates the transition of research to policy and practice through broad participation and partnership. With respect to education research, NSF is particularly noted for prioritizing and funding research that involves interdisciplinary collaboration among STEM, education, and social science faculty and research scientists and for investing in models of

For more on NAEP, see http://nces.ed.gov/nationsreportcard/. The NAEP assessment is not mandated, but to receive federal aid under NCLB, all states are required to participate in the NAEP assessments in reading and mathematics in fourth and eighth grade every 2 years.

On November 1, 2010, NBES approved the most recent set of IES priorities. Expanding on the mission of IES to “provide rigorous evidence on which to ground education practice and policy,” the priorities emphasize (a) quality research (rigorous studies that support causal inferences); (b) relevant research (effective research that meets the needs of policymakers and practitioners through partnerships); and (c) a broad range of student outcomes (including outcomes for students with disabilities). IES is also to (a) promote research to improve educational outcomes of all students and generate knowledge to support educators and policymakers in improving the education system and (b) support the “synthesis and dissemination of ongoing research to construct coherent bodies of scientific knowledge about education.” For details, see NBES (2010).

Percentages do not add up to 100% due to rounding.
education reform that engage educators at all levels through networking, partnerships, alliances, and collaborations. Total NSF funding through EHR programs and grants in 2009 exceeded $945 million (including $100 million in ARRA funds), supporting education research and evaluation at more than 1,900 colleges and universities across the U.S.\textsuperscript{9}

**Roles of States and Local Educational Agencies (LEAs) in Education Research**

In the loosely distributed hierarchy of the U.S. education system, states, school districts and schools each play a role in setting, prioritizing and interpreting policy; directing finances; and producing and consuming education research, evaluation, and data. Local governance operates under varying degrees of what is known as local control, in which education entities have different amounts of autonomy, decision-making power, and accountability that varies across states and among levels of the education enterprise. States often act as brokers and intermediaries between ED, districts, and schools, and the universities and colleges seeking to produce and consume education research. The federal policy priorities and funding that influence education research efforts typically flow through state departments of education, and are selectively absorbed and interpreted at the local level, although districts, schools and independent charter schools vary greatly in how they operate within this environment. With the advent of NCLB, local education organizations are under pressure to be more accountable, to monitor student achievement and teacher performance, and to make policy decisions on scientifically based evidence and research. This has led to a growth in local demand for education research results and more local data system capacity and analytical sophistication. However, most of the local data and research capacity resides at the state and large district level, and district data capacity is being undermined by recent local budget cuts in education. As noted previously, the federal government has responded by funding the development of state-level data warehouse systems, made IES and ARRA evaluation and research grants and contracts available to local entities, and has encouraged partnerships with education researchers. These resources provide opportunities for university researchers to collaborate with local educators under federal sponsorship (see also Henig, 2008a).

**Foundations and Other Intermediaries**

A growing number of nonprofit, membership, partisan, and advocacy organizations, as well as private foundations, have entered the education research arena to answer the demand for education research. Often these organization have their own agendas, priorities, sources of funding, and quality standards for education research, and the majority of their education sponsorship tends to go to development, advocacy, or marketing research—not education research.\textsuperscript{10} With regards to the limited amount of education research these organizations do fund, (some of which may be their own in-house research on specific topics), they also act as intermediaries by synthesizing, and translating extant research and data for policymakers, educators and the public. Often too, they are consumers of education research themselves


\textsuperscript{10} For a discussion of intermediaries see Henig, 2008a, pp.41-62
Private foundations such as the Bill and Melinda Gates Foundation often sponsor education research through academic institutions, but such funding does not come without compromise and limitations. Often private foundations tie research sponsorship to their own interests and agenda, establish their own standards for quality and integrity, and retain control of dissemination of results to their constituents and the public. Despite these limitations, foundations have become a significant source of research funding for some university education researchers.

The number of other intermediaries engaged in education research, such as policy groups, think tanks, and private technical assistance providers have increased in recent years, and as they have gained greater capacity themselves, and gained access to federal funding sources, they compete with university-based researchers for education research funding and audiences.

**New Directions for the University–Based Education Research Community**

The university-based education research community in the U.S. is large and diverse. Academic research in education is pursued by a wide variety of faculty, research scientists, and graduate students from a broad range of disciplines (education, psychology, statistics, sociology, history, economics, philosophy, anthropology, and political science), at public and private 4-year colleges, graduate degree-granting institutions, and large comprehensive, Research I and Research II universities. More than 4,400 universities and colleges offer degree-granting undergraduate and graduate programs, and of those, more than 1,117 award graduate degrees in education programs. The American Education Research Association currently has approximately 25,000 members, including members from colleges and universities, federal and state educational agencies, school systems, foundations, and the private sector. While many colleges and smaller universities’ faculties conduct education research, the Research I and Research II universities receive the bulk of federal funding for education research. Of the $72,893 million distributed by ED in 2009, $13,362 million went to postsecondary institutions and of that, $658.2 million went toward education research and statistics (U.S. Department of Education, 2009).

The remainder of the chapter focuses on this university-based education research community and discusses the opportunities and challenges brought about by the recent federalism in education, in particular regarding changes in the research process—knowledge generation, dissemination, and utilization—and the implications for rigor and relevance, scholarship, and policy.

**Changes in the University-Based Education Research Process**

The traditional avenues of academic research in education are based in the norms and culture of scholarship, academic freedom, and autonomy that allow faculty and research scientists to determine areas of interest and expertise. Standards and incentives in the academy are structured

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11 For more information on the Bill and Melinda Gates Foundation see Topics, Education and Information: http://www.gatesfoundation.org/Pages/home.aspx

12 For more information on education graduate programs in the U.S see, Graduate Guide http://www.graduateguide.com/
and enforced by discipline area and tenure requirements. The academy assures quality and
validity of research and directs publication through peer-reviewed scholarly journals and
dissemination to the field at large. For most faculty, research participation is a requirement of
tenure and the ability to obtain external funding for research also factors into tenure and
promotion decisions and contributes to scholarly reputation. Often departments and disciplines
are isolated from one another and operate in silos, and the education faculties have historically
been separate from the academic disciplines in the arts and sciences (Goldhaber & Brewer,
2008). The recent changes at the federal level described previously have already had an influence
on the traditional modes of university research practice by determining the funding streams and
research priorities, and by changing the way many faculty and research scientists generate
knowledge and transfer knowledge beyond academia. The current federally prescribed
framework affects university-based education research by influencing what is researched, who
produces research, the quality of research, how research is conducted and supported, and how
and when research is disseminated and utilized.

**Funding Priorities**

University faculty and researchers are normally required to procure their own research funding
and tend to follow the money, which for education researchers typically means entering the
federal competitive grant process. Federal law, policies, agencies and programs (e.g., NCLB,
ARRA, IES, and RttP) that support education research have become increasingly prescriptive
about what is to be researched (e.g., student outcomes, teacher performance, charter schools),
and how research is to be designed and conducted (e.g., randomized controlled trials, impact
evaluation, value-added analysis, and regression-discontinuity designs). Recent education
debates and politics have extended the NCLB focus on accountability, performance, and market
driven education to encompass teacher performance and compensation, charter schools, and
school reform innovations that provide evidence of reducing educational inequities and
achievement gaps. Until recently, faculty and researchers selected a research topic, a research
design, and appropriate research methods based on their area of scholarship and expertise. But
now, research topics and methods are frequently determined by the priorities of the funding
source.

Another aspect of the new funding priorities is the increased competition for limited federal
education research dollars. Federal funding for education research, despite recent increases, is
still less abundant than for other social science research, is more “tightly defined and controlled,”
and favors applied research over basic research. Such grant competitions as the i3 development
grants, TIF and the NSF and ED’s Math and Science Partnerships, have required collaboration
among researchers and program participants, and have opened research opportunities to think
tanks, advocacy groups, and state and local educational agencies. These organizations have been
building their own research capacity, and their increasing ability to meet the federal research
requirements and respond to client and partner needs make them a viable alternative source for
research support.

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13 Applied research is “referred to as the ‘four Ds’: development, dissemination, data, and direct services” in Henig, 2008b, p. 359.
14 For more on the NSF’s Math and Science Partnership Program see: http://www.nsf.gov/ehr/MSP/
These funding priorities and constraints force a tradeoff for university researchers—between scholarship autonomy and the limitations imposed by competitions for research funding prescribed by a federal research agenda. Henig (2008b) points out that given these constraints, some education researchers have been turning to foundations for funding, but foundation funding has its own set of limitations. Foundations tend to fund education research related to their own missions, such as in the area of vouchers, charters, and school choice and tend to control dissemination that typically by-passes the peer review process. The challenge to university education researchers is how to acquire funding without compromising control of their own research agenda and scholarship.

**Research Quality and Rigor**

The debate continues among education researchers as to how the federal drive toward scientifically based research and more statistically rigorous methodologies is changing the nature of education research itself. Debate also continues on how the new federalism influences education policy and practice. Meanwhile, the federal government has moved forward with defining expectations for high-quality research that is both rigorous and relevant. Beginning in 2002, Grover J. Whitehurst, the new director of IES, separated the grant review and contracting process and established more rigorous requirements in the grant application rules, and in standards for grant reviewers (Hess, 2008). At the same time, IES began to establish stricter methodological standards and review criteria for its four main centers (NCER, NCES, NCEE, and NCER) and any agency reports or research results disseminated by the new IES What Works Clearinghouse (WWC; What Works Clearinghouse, 2008). These priorities have been extended under the Obama administration and the current IES director, John Q. Easton. An evaluation of the effectiveness of IES, conducted in 2008, concluded that IES had been mostly successful in increasing the rigor and number of efficacy and effectiveness studies, and ensuring the high standards for quality of research reporting through the efforts of the WWC (Baldwin, Muller, Akey, McManus, Phillips et al., 2008).

The federal standards and expectations for scientifically based research have been redefined and raised, shifting the emphasis of education research toward applied research and evaluation and statistically sophisticated methodologies such as RCTs and use of large, longitudinal datasets. This poses challenges for academics whose research concentration is on developing the basic knowledge base of teaching and learning, or who rely heavily on non-experimental designs and qualitative methodologies. The push to advance quantitative methodologies has also challenged even university researchers who are well versed in those methods. Applied research methods and analytical models require not only quantitative analytical sophistication, but the skill to develop and access large longitudinal databases. Experimental research designs such as RCTs are difficult to set up, and costly to run and maintain over time; not all academic researchers have the capacity and skills to meet these requirements. However, the new direction towards scientific methods, rigorous standards, and applied research is a boon for academics who can meet the priorities and requirements. This new direction has opened the door to more interdisciplinary engagement by social and political scientists and economists, who bring new perspectives and analytical tools to the research process. For example, sociologists and economists who conduct research using national and state assessment databases (expanded under NCLB) and deploy
analytical models such as value-added analysis are finding many opportunities to expand their work and scholarship in the current research environment.

Quality and rigor of education research have typically been vetted by scholars within the academic field and through peer-reviewed journals that enforce high standards of research, design, analysis and publication. University and discipline reward and recognition systems rely on these mechanisms to ensure both scholastic and research excellence. Despite the oversight of education scholars and researchers, education research has generally been criticized for a lack of quality, accuracy, and relevance (Hess, 2008a; see also Goldhaber & Brewer, 2008). The poor reputation of education research fueled the NCLB emphasis on scientifically based research and the IES emphasis on establishing standards and mechanisms that promote rigor and quality in research supported by the federal government. The federal policies that push for rigor and quality could be interpreted by academics as a government intrusion on their scholarship, and indeed, much criticism has been leveled at IES and the WWC for overstepping their role in specifying and judging the quality of education research, and restricting grant awards and publication. Or, these priorities for rigor and quality could be embraced by university researchers as an opportunity to improve and repair the reputation of education research.

**Technology and Data: Resources for Generating Knowledge**

Over the last decade changes in technology resources and data infrastructure sponsored by the federal government have created new opportunities for education research, but have also been accompanied by changes in expectations for data, the research process, and knowledge generation. The federal and state governments have invested heavily in developing the capacity of instructional technologies, information systems, and data for educational accountability and research. NCLB spurred states and school districts to ramp up their test-based accountability systems, and required states to define and measure student proficiency annually in reading, math and science for Grades 3–8 (and 1 year in high school), and comply with new school and district accountability standards. States were also required to collect more extensive data on student characteristics (e.g., ethnicity, economic, and disability status) to be used to determine equity and effectiveness of schooling for diverse student populations. Mounting pressure for local educators and policymakers to be competitive for state and federal development grants (most of which now require at least baseline data and evidence for application) has also led to an increase in consumption of data at the local level. To handle, process, and provide access to the massive increase in student data called for under NCLB, the federal government built up technical resources and infrastructure at the federal level and provided significant funding to states to develop state-wide longitudinal data systems, such as $250 million for Statewide Data System development through 2009 ARRA funding (U.S. Department of Education, 2011). The NAEP

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15 For a discussion of the phrase “scientifically based research” and how it came to be featured in the NCLB legislation, its interpretations, and implications for research, see for example, Manna & Petrilli, 2008, pp. 63-88.

assessment, sponsored and managed by ED, has also been expanded over the years to include data and reports on national results, state level samples, and long-term trends.\textsuperscript{17} NCES\textsuperscript{18} collects all forms of education data, ensures data quality, and analyzes and advises on use of its databases under statistical and methodological standards. The number and quality of available data sets and analytical tools has grown significantly since NCLB was enacted, and the proliferation of the Internet and universal computing.

This federal investment in local and national data infrastructure and resources reinforces the federal framework for scientifically based research and the use of more rigorous methodologies and at the same time provides an extensive set of data sources for university-based education researchers to mine. Technology innovations have also increased the capability for data to drive research, but education researchers still face several hurdles. While the large, longitudinal federal datasets are fully accessible and provide substantial opportunity for large-scale and longitudinal analysis, they do not provide individual school and student level data for researchers interested in conducting more localized and time-sensitive research. Access to state, district, and school level individual data can be difficult and time-consuming for researchers to obtain, and transfer of data is often complicated. Data collection is dependent on assessment cycles and structured reports from test vendors, and school-level data collection and submission — often leading to delays and data quality issues. Local data systems are typically out of sync with researcher needs, because local data systems are organized for accountability and administrative purposes, transactional systems are not easily linked to one another (e.g., linking student and teacher data), and databases are not designed to support research in general, let alone inferential or predictive research models.\textsuperscript{19} For example, the emphasis on RCT research designs requires researchers to have access to high quality individual-level data that is timely, longitudinal, and easily organized for analysis. But, as many university researchers have found, there is often a mismatch between the long term RCT and research requirements and the immediate needs of local practitioners for decision-support and instructional improvement, around which the local data systems are typically designed.

While local educators have greatly expanded their data collection in the past decade, many still need the technical expertise that universities can provide in designing the data system architecture, dealing with data quality and security, and ensuring that the databases are designed for analysis. Local educators are aware that data in and of itself will not meet their information and decision-support needs. They typically lack the capacity to manage and analyze their data to facilitate instructional improvement, performance measurement, program evaluation and research, as well as administrative decision-support and accountability reporting.\textsuperscript{20} Increasingly,

\textsuperscript{17} For more details on the National Assessment of Educational Progress, see the NAEP website: http://nces.ed.gov/nationsreportcard

\textsuperscript{18} The National Center for Education Statistics (NCES) is charged with gathering and analyzing national education-related data, and providing access to these data to the research and education communities and the public. For more information on NCES, see their website: http://nces.ed.gov/

\textsuperscript{19} For a description of educational information systems and knowledge management issues, see Thorn, 2001.

\textsuperscript{20} The IES Practice Guide, Using Student Achievement Data to Support Instructional Decision Making, provides an overview of the current research and literature on local data barriers and use. See Hamilton, Halverson, Jackson, Mandinach, Supovitz, & Wayman, 2009.
local entities are seeking outside expertise and partnering with external organizations for help generating knowledge from their data—to turn the data into relevant and meaningful information they can use. Already many universities are pursuing new relationships with local educators by taking steps to provide information technology technical assistance and analytical expertise, and by creating mutually beneficial partnerships with local educators to bridge this data–knowledge gap. The benefits are that researchers attain access to high quality data for research, and local educators and decision makers receive assistance in transforming their data into relevant knowledge for policy and practice.

**Knowledge Dissemination and Transfer**

The ways in which scholarly education research is shared and distributed nationally have changed dramatically over the last 10 years. For university researchers, disseminating research results is no longer just about publishing research findings in peer-reviewed journals and books, or submitting grant reports to funding agencies. New technologies, practices, and expectations for knowledge dissemination and transfer oblige university researchers to reach more audiences, in new and timelier ways, with knowledge that is credible, concise, and easily consumed. The politics of vetting and reviewing research now extend beyond the academy, involving federal agencies and intermediaries as new gatekeepers in the review and dissemination process.

Innovations in technology have changed the patterns of communication as well as the quality and quantity of research dissemination. Online resources and universal access to the Internet have contributed to the growth of traditional scholarly education research outlets, such as increasing the number of peer-reviewed and specialized journals, enabling distribution of conference papers, increasing access to digital libraries, and encouraging a proliferation of small publishers. Innovations have also led to an explosion of online dissemination tools and networks: online publishers, digital libraries, blogs, websites, professional networks, specialized information clearinghouses, newsletters, and online versions of traditional print media such as newspapers and magazines. Free online search options such as Google Scholar and Web of Science, allow researchers and consumers alike to locate publications while also providing options for tracking scholarly output, its influence and impact.21 Online communication incorporates technologies that are both push and pull, and asynchronous and synchronous 22; these technologies support broad distribution, as well as collaboration, immediate feedback, and debate.

Publication and communication technologies deployed through the Internet have changed the publication, distribution, and consumption of scholarly education research. Many of the traditional academic and education research peer-reviewed journals and publishers have established online options for disseminating scholarly research that maintain established peer-

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21 For more information on online scholarly publication search engines, see Van Aalst, 2010.

22 “Pull” technologies involve the user in seeking out and selecting static on-line information (e.g., websites, streaming video and audio). “Push” technologies involve the producer of the information sending targeted users specific content and information (e.g., e-mail, RSS). “Synchronous” communication technologies support direct communication at the same time between producers and users of information (e.g., videoconferencing, chat). “Asynchronous” communication technologies support sharing of information anytime and consuming information at times convenient to users (e.g., e-mail, discussion boards.)
review and publication criteria. The proliferation of other online dissemination options offers quick visibility and distribution of results, but these options often forego any scholarly review process, and the shorter research-to-distribution turnaround times can be at odds with the time needed to conduct and vet rigorous research, making these options less attractive for academic researchers. However, the sheer quantity of education research available online, much of it unsupported by quality review or standards, creates a complex array of resources for consumers to navigate. Academic and scholarly papers are often difficult for readers to understand, so they turn to online resources that summarize and explain research results in terms they can understand and use. Often, in translation, the research becomes oversimplified or misinterpreted as it enters the public domain through these channels.

The federal government has also built up its online presence for dissemination of education research. Two notable examples are the Educational Resources Information Center (ERIC), established in 1965 as a library to disseminate education research nationally, and the relatively new WWC. The WWC is a new breed of government-sponsored website, designed to promote informed educational decision making through review and dissemination of education research, innovations and products that meet the IES rigorous evidence standards. More than just another internet repository, the WWC was intended to transform how the federal government manages education knowledge, and ensures its quality and accessibility. IES established the WWC in 2002, to identify valid and reliable research that meets stringent evidence standards, and to make research, evidence, and best practices accessible to the public online. The development and operation of the WWC and its guiding standards and products has not been without struggle and controversy (Henig, 2008a; U.S. Government Accountability Office, 2010). Many researchers and academics criticized the quality, application and timeliness of the early WWC, voicing concerns about the standards and review process, and complaining that university research experts did not participate in the development of the standards (Chatteji, 2004; U.S. Government Accountability Office, 2010; Shoenfeld, 2006; Slavin, 2008).

The early WWC vetting criteria qualified three types of research studies for publication: randomized experiments, quasi experiments with equating, and regression discontinuity designs. Some researchers felt that the WWC criteria were too narrow and failed to consider other relevant research criteria. Shoenfeld (2006) raised concerns about the role and potential conflict of interest of federal organizations vetting and possibly suppressing research that casts doubts on its own policies. Few early postings on the WWC passed the review standards, and of those that did, the majority provided evidence of what “doesn’t work” rather than “what works,” offering little guidance for educators and prompting the WWC to be nicknamed the “What doesn’t Work Clearinghouse.” But it appears that the WWC was listening and has been hard at work to address these issues. By 2008, an evaluation of the effectiveness of IES noted that the WWC received more than 11 million Internet hits in 2007. Of those accessing the WWC, the majority were teachers and administrators, who planned to use the information for curricular decisions and making local, state, and federal policy decisions (Baldwin, et.al, 2008). Also in 2008, Mathematic Policy Research Inc. (which operates the WWC) reported that of the 100 reports posted on the WWC, more than 62 percent include at least one positive finding (Viadero, 2009).

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23 What Works Clearinghouse, 2008. For more information on the WWC, and to view the website and resources see http://ies.ed.gov/ncee/wwc/
More recently, a 2010 GAO report on the WWC found that the WWC had met recommendations by an expert panel to improve the review and reporting process. WWC responded to researcher’s concerns about screening criteria that excluded certain rigorous research designs by creating new standards that include two additional research designs, and increased the WWC use by creating practice guides, (a new product that includes a broader range of research and information). The report also recommended that while the WWC had increased its output and scope, it still needed to attend to improving the dissemination and the timeliness of product releases to increase its usefulness and effectiveness (U.S. Government Accountability Office, 2010). The WWC has successfully revised its reputation and has become a more trusted source of research evidence. It has established itself as a viable dissemination tool in the eyes of researchers and educators.

Other trends affecting the dissemination of education research and results are the privatization and commercialization of academic research products. As seen recently in the fields of science, medicine, and engineering, university research is becoming increasingly market-driven, and product and service oriented. Government sponsors of research require universities to demonstrate their economic and social contributions by disseminating products and building public knowledge capacity (Mintrom, 2008). Also seen influencing university research practice is the concept of knowledge transfer, in which sharing of information and ideas between public and private domains becomes more useful and actionable through effective management and distribution. Universities in the U.S have long debated the proper balance between the primary missions of teaching and basic research, and the generation and transmission of knowledge for the public good. In Europe, the “third sector” or mission at many universities is knowledge transfer through outreach, service, and technical assistance (Mintrom, 2008). 24 These trends are beginning to have an influence on education research at U.S. universities as federal pressures mount for scientifically based research and for researchers to make their research relevant and viable for public consumption. Along with the introduction of privatization and commercialization comes the growing presence of intermediary organizations (e.g., policy and advocacy groups, technical assistance providers, private vendors, think tanks etc.) who mediate dissemination and translation of scholarly work, synthesize education research for consumption by policymakers, market research by-products, and serve as technical assistance providers to link policy and practice (Honig, 2004, see also Manna & Petrelli, 2007). Of concern to the university education research community is the varying capacity of these organizations to synthesize and communicate research that is accurate, and unbiased, and does not solely advocate political agendas or commercial products or compromise scholarship. 25 Many researchers are still unsure about whether to engage at all in these trends, and if so, how best to interact and develop productive relationships with the public–private educational enterprise.

The positive implications for universities of this new world of education research dissemination and knowledge transfer are that the changes create access to scholarly research by new audiences in potentially more productive ways. Not only does the Internet create countless opportunities for public access to research information and results, but it also creates new options for interaction and debate among researchers and policymakers and intermediaries. At the same time, university

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24 For more information on universities and knowledge transfer, and the “third sector” of higher education activity, see: Ozga & Jones, 2006 and Cain, Branin & Sherman, 2008

25 For a discussion of these issues, see Fusillari, 2007, pp. 177-196
researchers are concerned that these new patterns of dissemination expose their research to new pressures and vulnerabilities. The new technologies have changed the time-line and expectations for research publication. By allowing for more immediate release of results, research enters the public domain often prior to review, fueling public debates in the media, and exposing findings to immediate interpretation. The worry of academics is that these new modes of dissemination may circumvent the more rigorous, albeit time-consuming, process of scholarly peer review and come at the expense of quality research and scholarship. It is difficult for the academy and the disciplines that conduct education research to ensure scholarly and research publication excellence, and to control interpretation of research findings, in a medium such as the Internet that is designed to be an open source of information.

**Research Relevance and Utilization**

In its first 5 years IES was successful in promoting and advancing its main priority—rigor in education research—as demonstrated by the reorganization of the institution, the improved structure of IES sponsored programs, increases in education research capacity of the field (e.g., postdoctoral fellows and training institutes), and the dissemination of results through the WWC. The aim was to establish higher standards for production of rigorous research design, quality, and reporting, and reinforce the call for consumption of scientifically based research in the NCLB legislation. The early IES priorities also included improving the relevance and utilization of education research, but with these priorities, the newly established IES fared less well. An evaluation of IES in 2008 found mixed results coming from reviews of NCER, NCSER and NCES regarding attention to relevance (defined as the usefulness, alignment to goals, and timeliness of education research) from 2002–2007. Of particular concern was the need to improve the ability of the efficacy and scale-up studies in providing relevant findings to the field. Of concern too, was the lack of emphasis on ensuring timeliness of findings related to rigorous research (although the evaluation showed a high level of satisfaction with the improved NCES databases, publications, and timeliness). The IES priority of utilization (defined as translating the results of education research for use in evidence-based decision making in policy and practice) was not as much of an institutional focus in the first 5 years as rigor, and received the lowest marks in the evaluation. Evaluators noted they had difficulty in identifying and measuring utilization, and recommended that the research base for knowledge utilization be strengthened in order learn what types of evidence practitioners and policymakers use and how they use it (Baldwin et al., 2008).

Beginning in 2009, under the direction of John Q. Easton, IES continued to build capacity for education research rigor but also became more serious about improving research relevance. In 2010, Easton set forth five “big ideas” for IES to support education research “that matters to schools and improves educational outcomes for children.” These involved IES in: (a) making research more useful and relevant, (b) shifting from a model of dissemination to a model of facilitation, (c) creating stronger links between research development and innovation, (d) building state and district capacity to use longitudinal data systems for research and evaluation, and (e) developing an understanding of schools as learning organizations (Easton, 2010). The current IES call for increasing research relevance, use, and application was confirmed by the NBES in fall 2010, who approved “relevant research” as one of three priorities for IES.
recommending that “effective research meets the needs of policymakers and practitioners through partnerships” (NBES, 2010).

Much of what is known about education research utilization—how policymakers and educators interpret and apply research and evidence in their decision making—comes from a relatively small body of work developed over the last 30 years (Fusarelli, 2008; Henig, 2008a; Honig & Coburn, 2008; Weiss, 1979, 1982, 1998, 1999). Recently, studies of research utilization and data use have been revitalized under the demands of evidence-based decision making by NCLB policies. Older and more recent studies tend to agree in their main findings regarding what influences evidence use in decision making. The studies generally agree that while policymakers and practitioners do consult scholarly journals and reports for research results, they are seldom influenced solely by scholarly research findings in making specific policy decisions. More often, they are influenced by a variety of sources, such as their own preexisting knowledge and beliefs, local education politics, public and legal issues, economics, media pressure, and the welfare of individuals, rather than by research evidence. Findings also indicate that educators are most likely to use research evidence developed in a local context that they can trust, that meets their immediate needs, is timely, and is easily interpreted and summarized (Coburn et al., 2009; Honig & Coburn, 2008; Nelson et. al., 2009; Weiss, 1982; Urban & Trochim, 2009. Common reasons as to why practitioners fail to make use of research results include (a) a lack of time to search and read the extensive research available, (b) the fact that few studies produce high quality evidence that is transferrable to practitioners’ needs and context, (c) the fact that studies lack relevance and applicability to practitioners’ work or for improving instructional practices, and (d) the fact that rigorous longitudinal studies take too long to complete and publish, the results come too late, and the results are out of sync with the immediate needs of practitioners (Honig & Coburn, 2008; Nelson, Leffler, & Hanson, 2009; Shankland, 2010). Both policymakers and practitioners indicate that to use scholarly research results effectively they need distilled information that is locally relevant and credible, provides examples from multiple studies, and considers long-term impact and sustainability for the entire local educational system (Nelson, Leffler, & Hanson, 2009). Other studies have also found that educators and policymakers typically lack the ability and time to search for and interpret research evidence and data in their decision making—eliciting recommendations for more research training of educators in preservice and in-service development, school learning communities, and University/K-12 partnerships (Easton, 2008b; Honig & Coburn, 2008; Shankland, 2010; Urban & Trochim, 2009; National Center for Education Research, n.d.).

The NCLB legislation places specific policy demands on practitioners, policymakers, and education researchers to utilize scientifically based research and the recent IES emphasis on the three priorities of research rigor, relevance, and utilization reinforces these demands. Practitioners are required to use scientifically based research, and to draw on the abundance of student achievement data for data-based decision making, to select curricula and programs, to improve teaching and learning, and to inform school reform. Policymakers are under pressure to evaluate programs and demonstrate effective allocation of resources. Now, education researchers are also feeling pressure to make their research more useful in order to identify remedies and

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26 See the William T. Grant Foundation (2010, February), whose current education funding priority is supporting research on what effects policymakers’ and practitioners’ acquisition, interpretation and use of research evidence.
inform improvements in policy and practice at both the national and local level. But producers and consumers of education research define “what is relevant” based on different sets of needs, purposes, and incentives. As described above, federal education officials maintain that relevance comes from rigorous research that is tied to education priorities and policies, identifies solutions and “what works,” is timely, and has sufficient internal and external validity to be replicated and scaled-up by local practitioners. Yet local practitioners define research as relevant if it considers their own local data and context, consists of examples from multiple studies, and aligns with local needs, experiences and policies. To make defining relevance even more complicated, university researchers tend to think of relevant research as that which is more question-driven rather than solution-driven, contributes to the education knowledge base, meets discipline norms for scholarship and rigor, and establishes credibility and authoritative expertise. There is a clear disconnect between what policymakers, practitioners and researchers value when it comes to relevance in education research, and this disconnect contributes to the gaps between research, policy, and practice in education today.

As many have observed, there is discontinuity in the research process between production and consumption, and a mismatch between the federal priorities for research rigor, academic emphasis on scholarship, and reliance on local relevance for policy and practice. The gaps that exist between research, policy, and practice lead to less utilization of research, unmet local needs, and missed opportunities to reform schools and improve student achievement. As recently as June 2010, Secretary of Education, Arne Duncan advocated for the need to build a bridge between research, policy, and practice and implored university researchers to lead the way by moving “out of the Ivory Tower and into the schoolhouse” (Duncan, 2010). While much has changed already under the first 8 years of NCLB implementation, changes in the education research process at universities that reinforce policy and practice, relevance, and utilization, are slow to emerge and have yet to become institutionalized. Education research and policy analysts suggest that in order to make education research more central to education policy and to integrate research into practice, university researchers must change their research processes and create a connection between knowledge generation and application (Urban & Trochim, 2009). These types of changes will require many universities to revisit their primary mission and their discipline norms to give serious consideration to what they value, and how they promote and reward knowledge transfer, outreach, service, and technical assistance. To successfully take on this challenge and bridge the research–practice gap, universities may also need to reorganize and restructure the roles of education faculty and researchers.

**New Roles for Education Researchers**

University faculty and research scientists have already begun to respond to the calls for new modes of research collaboration and communication, and new roles and relationships both within academia and with policymakers, intermediaries, and practitioners, externally. Traditionally, education faculty and research scientists have worked and produced research autonomously, often in isolation from their peers or departments, and on a single project-by-project basis. If

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27 For more on the debate about the role of relevance in education research, see Bulterman-Bos (2008) and rebuttal articles in Educational Researcher 2008, Vol. 37, No.7.

28 For a discussion of these issues see Urban & Trochim, 2009; and Hess, 2008.
they work collaboratively, it was typically done so on an ad hoc basis, without developing sustained relationships with fellow researchers or local educators, and without the intention or organization to integrate, synthesize, and develop capacity at the local level. The Consortium on Chicago School Research (CCSR) has identified four traditional roles university education researchers have pursued in the past to influence educational practice. CCSR acknowledges that over time each of these roles has met success in various ways, but what each of these traditional roles lack are sustained connections between education researchers and local policymakers and practitioners, which results in research output that fails to contribute to the local capacity for reform. These shortcomings of the traditional roles of education researchers and the shifts in national education policy inspired the development and organization of new models of collaboration between universities and the K–12 education system.

As early as 1965, the federal government began to facilitate a shift in the role of universities in education research. Federally sponsored education researchers were asked to take their research beyond academia and produce research results that would serve local and national education policies, and provide local educators with technical support. By 1965 the federal government had established two sets of national education research institutions affiliated with major universities—the research and development centers (to conduct long-term and large-scale research) and the regional education labs (to support development and technical assistance to practitioners stemming from research). For decades, these centers and labs managed and conducted the majority of federally sponsored education research and technical assistance. Today, there are fewer labs and centers, and those that remain receive less direct federal funding, which has forced the regional labs to become partially privatized and the centers to rely more heavily on competitive government grants and foundation funding. In the last 10 years, the federal support of university-based education research has altered the way universities organize and manage their research. ED and NSF have both instigated competitive grant programs that require interdisciplinary involvement of researchers and faculty, partnerships with local educators, cooperation in collecting and analyzing student outcome data, technical assistance, and scaling and sustaining of reform efforts. The result is that universities have organized new ways of partnering with school districts and collaborating with think tanks, nonprofits and foundations.

These trends are illustrated by three models of collaboration among higher education, public K–12 education, and private organization collaboration in education research. The first example is of a model that directly pairs a major research university with a specific school district. CCSR, formed as a result of the Chicago School Reform Act of 1988, is an independent organization and partnership between the University of Chicago and Chicago Public Schools (CPS) aimed at conducting rigorous research and evaluation to build local capacity for improvement of CPS’s

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29 The Consortium on Chicago School Research (CCSR) has identified four traditional roles university education researchers have pursued in the past to influence educational practice. See Roderick, Easton, & Sebring, 2009.

30 Hess (2008d) also describes a mismatch between local leaders and researchers, citing a disconnect between incentives for researchers to conduct scientifically-based research and the incentives, needs and capacity of local leaders to consume the results.
school reform efforts. Researchers at the University of Chicago conduct technical, policy-relevant research in Chicago schools that is designed to build the district’s capacity for reform by being accessible to local practitioners and administrators and by increasing the district’s use of data, effective strategies, and evaluation. The CCSR model engages researchers and practitioners in research within a local context or lab setting which allows for long-term relationships, research collaboration, data access, coherence across research studies, and rigorous research design and implementation, thereby producing evidence that is both locally relevant and more broadly instructive to the field of education reform (Roderick, Easton, & Sebring, 2009).

A second model is the technical assistance center model, exemplified by the Center for Educator Compensation Reform (CECR). CCR is a federally funded technical assistance center that is comprised of researchers from the University of Wisconsin and Vanderbilt University who work in conjunction with Westat and Learning Point Associates (a private education research organization and former regional lab that is now privatized). As part of ED’s Teacher Incentive Fund (TIF) program, CECR was established to provide research-based expertise, ongoing research support, and technical assistance to state and school district TIF grantees in developing new teacher compensation systems based on rigorous evaluation methods and analytical models such as valued-added analysis. This model is unique in that it brings together university researchers, private organizations, local practitioners, and federal sponsorship to generate and test new teacher compensation systems based on existing research, and on development of new analytical models and evaluation approaches, within a framework of on-going program support and technical assistance. The CECR model demonstrates a new role for universities in generating and transferring knowledge directly to policy and practice.

A third model is the partnership model, advocated by both the NSF and ED in their Math and Science Partnership (MSP) initiatives. These MSP partnerships take a variety of forms, but each has in common participation by both higher education and K–12 partners, interdisciplinary faculty engagement at the leadership level, and a required research and evaluation component that yields evidence of progress and sustainability. The partnership model connects faculty and educators, researchers, and practitioners in ongoing relationships that are designed to integrate and bridge research, policy, and practice.

Within the universities, the federal opportunities for education research funding and application of scientific methods to education research have drawn faculty and staff from other disciplines, such as economics and sociology, resulting in interdisciplinary teams and collaborations. Universities have also created expanded roles for education researchers and faculty who conduct evaluation studies, who handle impact analysis, and who connect research and practice through formative studies and technical assistance (Urban & Trochim, 2009). These new roles and

31 Roderick, Easton, & Sebring, 2009. John Q. Easton, the former Director of CCSR and co-author of this publication, became the Director of the Institute for Education Sciences in 2008 and has been a proponent for linking education research to local practice.

32 CECR research is housed at the Wisconsin Center for Education Research, at the University of Wisconsin–Madison. WCER is one of the 13 original Research and Development Centers started in 1965 by the U.S. Department of Education.

33 For more on the NSF’s Math and Science Partnership Program see: http://www.nsf.gov/ehr/MSP/
relationships help university-based education research bridge the research—practice gap by meeting federal standards for rigorous analytical models for evaluating teacher and student performance, by supporting development of district and state data system capacity and shared knowledge management, and by meeting local decision-making and technical assistance needs, while at the same time maintaining university interests in scholarship and research credibility and integrity. These are just a few examples of the ways universities and education researchers have already adapted their roles and reorganized in response to the federal prerogative to bridge the gap between research, policy, and practice.

**Implications for University-Based Education Research**

The trends in federal policy that began with the passage of NCLB and continue to evolve today have already had an undeniable influence on the process of education research and the roles of universities in that process. In 2002, NCLB established the current education research framework, by (a) legislating education and research priorities, (b) mandating methodological design, (c) controlling research funding streams, (d) investing in national data and technology resources and infrastructure, and (e) by setting standards for everything from student and teacher performance to research quality and dissemination. Since 2008, the federal government has extended these parameters through (a) increasing the education research funding budget and stimulus monies, (b) reorganizing ED and IES, (c) expanding the competitive grant and contract process to intermediaries, practitioners, and partnerships, and (d) prioritizing research relevance and utilization along with rigor. The extent to which the new federalism will continue to change how the university education research community conducts, shares, and integrates research with education policy and practice depends on whether universities consider and respond to these factors as opportunities or as impediments.

The federal influence on education research affords universities (a) more federal funding options, (b) improved access to improved national and state education data systems, (c) support for large-scale, long-term, experimental research studies, (d) additional online resources for dissemination of research, (e) new research partners and collaborators, and (f) expanded audiences for consumption of research results, products, and services. Research trends such as privatization, commercialization, and knowledge transfer are also influencing university research and becoming significant factors that education researchers must consider. Increasingly, university research is market-driven, and researchers are moving away from developing the knowledge base of their field to conducting applied research and developing related products and services. Together these trends and the federal influence have the potential to revitalize the education research process and its reputation, create more productive relationships and roles, improve communication, and transform research into policy and practice.

However, the new direction for education research does not come without serious considerations, for the university research community. To accommodate the new federalism, university education researchers face a tall order—they will need to come “down from the Ivory tower” (Duncan, 2010); change their discourse and relationships with government and the public, and learn to navigate between research and advocacy, and between knowledge and politics, while at the same time maintain the academy’s standards for research quality and relevance.
Universities may need to revisit their incentive and reward systems, and reconsider which aspects of education research are valued for tenure and promotion. The university community will need to consider how a stronger emphasis on research-related products, services, and knowledge transfer will affect the institutions’ knowledge development imperative, and its service and outreach missions. Education researchers will need to decide how dependent they are on federal funding, and if they are willing to diversify and work collaboratively with researchers from other disciplines, with intermediaries, and with local practitioners. To remain competitive for federal funding, individual faculty and research scientists will need to consider if they want their research to be more applied than basic, to become more policy- and practice-relevant, and to be vetted and debated in the public domain. Should university researchers accept these challenges, an optimal balance between traditional academia and the new federalism could fundamentally change the education research process and the relationships between universities, government and the public.
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